

CHARACTERISTICS OF *BRUCELLA* spp. AND SIMILAR BACTERIA

TEST	<i>Brucella</i> spp.	<i>Bordetella bronchiseptica</i>	<i>Acinetobacter</i> spp.	<i>Psychrobacter phenylpyruvicus</i> ¹	<i>Oligella ureolytica</i>	<i>Haemophilus influenzae</i>
Oxidase	+	+	-	+	+	V
Motility	-	+	-	-	V	-
Urea hydrolysis	+	+	V	+	+	V
Nitrate Reduction	+	+	-	V	+	+
Growth SBA ⁴	+	+	+	+	+	-
Cellular morphology	tiny coccobacillus, stains faintly	small coccobacillus, rod	broad coccobacillus	broad coccobacillus	tiny coccobacillus	small coccobacillus
Usual specimen source	blood, bone marrow	respiratory tract	various sites	various sites	urinary tract	mucous membranes
X or V factor requirement	-	-	-	-	-	+

¹Formerly *Moraxella phenylpyruvica*

²Oxidase: *B. abortus*, *B. melitensis*, and *B. suis* are all ≥95% (+); *B. canis* is 72% (+)

³(+) = ≥90% positive, (-) = ≥10% positive, v (variable) = 11- 89% positive

⁴SBA = Sheep blood agar

SPOT TEST REACTIONS OF SELECTED BACTERIA¹

ORGANISM	GRAM STAIN MORPHOLOGY			GROWTH ²			OXIDASE	CATALASE	INDOLE	UREA
	SBA	CHOC	MAC	MOTILITY						
<i>Actinobacter</i> spp.	Gram-negative broad coccobacillus (1.0 x 2.0 µm) ³	+	+	-	-	-	+	-	-	-V
<i>Actinobacillus</i> spp.	Gram-negative coccobacillus (0.4 x 1.0 µm)	+	+	V	-	+V	+V	-	-	+V
<i>Bacillus anthracis</i>	Gram-positive broad rod (1.0 x 4.0 µm)	+	+	-	-	+V	+	-	-	-
<i>Bordetella bronchiseptica</i>	Gram-negative coccobacillus (0.4 x 1.2 µm)	+	+	+	+	+	+	-	-	+
<i>Brucella</i> spp.	Gram-negative coccobacillus (0.6 x 0.8 µm)	+	+	V	-	+	+	-	-	+
<i>Francisella tularensis</i>	Gram-negative coccobacillus (0.2 x 0.7 µm)	-	+	-	-	-	+	-	-	-
<i>Haemophilus aphrophilus</i>	Gram-negative coccobacillus/rod (0.5 x 1.5 µm)	+	+	-V	-	-	-V	-	-	-
<i>Yersinia pestis</i>	Gram-negative rod (0.7 x 2.0 µm)	+	+	+	-	-	-	+	-	-

¹(+) = ≥90% positive, (-) = ≥10% positive, (+V) = most species/strains positive, (-V) = most species/strains negative, v (variable) = 11 - 89% positive

²SBA = Sheep Blood Agar, CHOC = Chocolate Agar, MAC = MacConkey Agar

³Perform catalase test in BSC-II. The bubbles generated from a positive reaction produce a substantial aerosol.

CHARACTERISTICS OF *Bacillus anthracis* AND SIMILAR BACTERIA

TEST	<i>B. anthracis</i>	<i>B. cereus</i>	<i>B. cereus var mycoides</i>	<i>B. thuringiensis</i>	<i>B. megaterium</i>	<i>B. subtilis</i>
β-hemolysis on SBA ¹	-	+	-	+	-	(64%)
Motility	-	(99 [†] %)	(63 ^V %)	+	(42 ^V %)	(84 ^V %)
Capsule	+	-	-	-	(+ in rare variants)	(+ in rare variants)
Urea hydrolysis	(0 ^V %)	(26 ^V %)	(25 ^V %)	(weak)	(47 ^V %)	(47 ^V %)
Nitrate Reduction	(100 [†] %)	(89 ^V %)	(89 ^V %)	+	(10 ^V %)	(89 ^V %)
Oxidase	(87 ^V %)	(63 ^V %)	(25 ^V %)	V	(42 ^V %)	(61 ^V %)
Indole	-	-	-	-	-	-
Cell width >1.0 micron	+	+	+	+	+	-
Gamma phage lysis	+	-	-	-	-	-

¹SBA = Sheep blood agar